

Appl. No. 10/059,969
Amdt. dated May 20, 2004
Reply to the Office Action of January 20, 2004

REMARKS/ARGUMENTS

Reexamination and reconsideration of this application as amended is requested. By this amendment, Claims 1-4 have been amended. Claims 27-30 have been canceled without prejudice. After this amendment, Claims 1-14 remain pending in this application.

Claims Amendment To Advance Prosecution **In Conformance With Applicants' Election of Group I Claims**

To advance the prosecution of the application, all non-elected and withdrawn claims (i.e., claims 27-30) have been canceled without prejudice or disclaimer. Applicants expressly reserve the right to later file a divisional application directed to the non-elected Claims 15-30.

Claims Rejection under 35 U.S.C. § 103(a) over Lu et al.

The Examiner rejected Claims 1-4 under 35 U.S.C. § 103(a) as being unpatentable over Lu et al. (U.S. Patent No. 5,883,687).

Applicants have amended Claims 1-4 to more clearly and distinctly recite the presently claimed invention. In particular, with respect to amended independent Claim 1, and for all dependent claims depending therefrom, the claim language now more distinctly recites that the twist angle is in the range from about greater than 70 degrees to less than 90 degrees. Support for the amended claim language may be found in the original specification, for example, on page 11, lines 1-10, and on page 15, lines 17-20. No new matter was added by the amended claim language.

Also, with respect to amended language of dependent claim 2, the claim now more distinctly recites that the twist angle is a low twist angle in the range from about greater than 70 degrees to 85 degrees to stabilize the liquid crystal medium disposed in the cell gap, particularly at zero and high fields. Support for the amended claim language may be found in the original specification, for example, on page 1, lines 19-20, on page 6, lines 4-5, on page 8, lines 15-18, on

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page 9, lines 1-2, and on page 11, lines 9-13. No new matter was added by the amended claim language.

Further, with respect to amended dependent claim 3, the claim now more distinctly recites that the twist angle is different for each of the plurality of alignment domains within the liquid crystal cell. Support for the amended claim language may be found in the original specification, for example, on page 15, lines 1-5. No new matter was added by the amended claim language.

Lastly, with respect to amended dependent claim 4, the claim now more distinctly recites that the twist angle is about greater than 70 to about 80 degrees. Support for the amended claim language may be found in the original specification and claims, for example, see the original claim 4 language, and see the specification, for example, on page 11, lines 1-10, and on page 15, lines 17-20. No new matter was added by the amended claim language.

With respect to the teachings of the Lu patent reference, note that Lu keeps the twist angle to the range of 45 degrees to 70 degrees, and preferably the twist angle is 54 degrees, for achieving higher optical throughput. See column 14, lines 38-42.

On the other hand, the presently claimed invention utilizes the different twist angle range of greater than about 70 degrees to less than 90 degrees, with preference for the range up to about 85 degrees, for achieving stabilization of the multi-domain liquid crystal structure. This range for the twist angle advantageously provides stable liquid crystal domain structure, particularly at zero and high fields. See the present specification, for example, on page 1, lines 19-20, on page 6, lines 4-5, on page 8, lines 15-18, on page 9, lines 1-2, and on page 11, lines 9-13. There is no teaching or suggestion in Lu to utilize a low twist angle range for stabilizing the liquid crystal structure as taught and recited for the presently claimed invention.

Therefore, in view that Lu does not teach or suggest, inter alia, the presently claimed twist angle range greater than about 70 degrees to less than 90 degrees, as recited for amended independent Claim 1, and for all dependent claims depending therefrom, Applicants believe that Claims 1-14 are allowable. Applicants, accordingly, urge the Examiner to allow amended

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independent Claim 1, and all dependent claims depending therefrom, respectively.

Further, with respect to amended dependent Claim 2, which depends from allowable independent Claim 1, the Claim 2 language now more distinctly recites that the twist angle is a low twist angle in the range from about greater than 70 degrees to 85 degrees to stabilize the liquid crystal medium disposed in the cell gap, particularly at zero and high fields. This particular novel feature recited for Claim 2 is also not taught or suggested by Lu.

Additionally, with respect to amended dependent Claim 3, which depends from allowable independent Claim 1, the Claim 3 language now more distinctly recites that the twist angle is different for each of the plurality of alignment domains within the liquid crystal cell. Note that while the twist angle is in the range from about greater than 70 degrees to less than 90 degrees, the twist angle is different for the different domain structures. This particular novel feature recited for Claim 3 is also not taught or suggested by Lu. Note that Lu discusses twist angles at 90 degrees, for example see column 8, lines 1-12. Also, Lu discusses the same twist angle magnitude with a + sign and a - sign for first and second liquid crystal materials. For example, see column 9, lines 50-62. Note that the preferred magnitude is 54 degrees, whether applied as a + or as a -. Lu states "[f]or a positive or negative dielectric anisotropy, the preferred magnitude of the twist angle is approximately 54 degrees."

Therefore, in view of the discussion above, Applicants believe that Lu does not teach or suggest the presently claimed invention, as recited for independent Claim 1, and for all dependent claims depending therefrom, respectively. Further, the amended dependent Claims 2-4 now more distinctly recite aspects of the presently claimed invention that are not taught or suggested by Lu. Accordingly, Applicants believe that the rejection of Claims 1 to 4 has been overcome by the amendment and remarks above. The Examiner should withdraw the rejection.

Claims Rejection under 35 U.S.C. § 103(a) over Lu et al. in view of Murai et al.

The Examiner rejected claims 5-14 under 35 U.S.C. §103(a) as being unpatentable over Lu et al. (U.S. Patent No. 5,883,687), in view of Murai et al. (U.S. Patent No. 6,115,093)

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As has already been discussed above in response to the rejection of claims 1-4 over Lu, Applicants have amended independent Claim 1 to more clearly and distinctly recite the present invention. For amended independent Claim 1, and for all dependent claims depending therefrom, the claim language now more distinctly recites that the twist angle is in the range from about greater than 70 degrees to less than 90 degrees. Support for the amended claim language may be found in the original specification, for example, on page 11, lines 1-10, and on page 15, lines 17-20. No new matter was added by the amended claim language.

Dependent Claims 5 to 14 depend from amended independent Claim 1, and accordingly recite all of the limitations of independent Claim 1. Applicants consider that these dependent Claims 5-14 are also in allowable form in view of the following discussion with reference to the amended claim language of Claim 1.

As has already been discussed above, Lu keeps the twist angle to the range of 45 degrees to 70 degrees, and preferably the twist angle is 54 degrees, for achieving higher optical throughput. See Lu, column 14, lines 38-42.

On the other hand, the presently claimed invention utilizes the different twist angle range of greater than about 70 degrees to less than 90 degrees, with preference for the range up to about 85 degrees, for achieving stabilization of the multi-domain liquid crystal structure. This range for the twist angle advantageously provides stable liquid crystal domain structure, particularly at zero and high fields. See the present specification, for example, on page 1, lines 19-20, on page 6, lines 4-5, on page 8, lines 15-18, on page 9, lines 1-2, and on page 11, lines 9-13. There is no teaching or suggestion in Lu to utilize a low twist angle range for stabilizing the liquid crystal structure as taught and recited for the presently claimed invention.

Further, while the Examiner characterizes Murai as teaching multi-domains each having different alignments directions, Murai teaches 90 degree twist angle (see for example column 8, line 29). Murai does not teach or suggest the presently claimed twist angle range of greater than about 70 degrees to less than 90 degrees, with preference for the range up to about 85 degrees.

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Murai also does not teach or suggest a low twist angle for achieving stabilization of the multi-domain liquid crystal structure. As has been discussed above, this new and novel range of low twist angle, as taught and claimed for the present invention, advantageously provides stable liquid crystal domain structure, particularly at zero and high fields.

Neither Lu, Murai, nor any combination of the two cited references, teaches or suggests the presently claimed twist angle range of greater than about 70 degrees to less than 90 degrees, as recited for amended independent Claim 1. Claims 5 to 14 depend from amended Claim 1 and, since dependent claims recite all of the limitations of the independent claim, it is believed that, therefore, these dependent claims also recite in allowable form.

Accordingly, in view of the amendments and remarks above, since neither Lu, Murai, nor any combination of the two cited references, teaches, anticipates, or suggests, the presently claimed twist angle range of greater than about 70 degrees to less than 90 degrees, Applicants believe that the rejection of Claims 5 to 14 under 35 U.S.C. 103(a) has been overcome. The Examiner should withdraw the rejection of these claim.

Conclusion

The foregoing is submitted as full and complete response to the Official Action mailed January 20, 2004, and it is submitted that Claims 1-14 are in condition for allowance. Reconsideration of the rejection is requested. Allowance of Claims 1-14 is earnestly solicited.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless Applicants have argued herein that such amendment was made to distinguish over a particular reference or combination of references.

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Applicants acknowledge the continuing duty of candor and good faith to disclosure of information known to be material to the examination of this application. In accordance with 37 CFR §§ 1.56, all such information is dutifully made of record. The foreseeable equivalents of any territory surrendered by amendment are limited to the territory taught by the information of record. No other territory afforded by the doctrine of equivalents is knowingly surrendered and everything else is unforeseeable at the time of this amendment by the Applicants and the attorneys.

The present application, after entry of this amendment, comprises fourteen (14) claims, including two (2) independent claims. Applicants have previously paid for thirty (30) claims including four (4) independent claims. Applicants, therefore, believe that an additional fee for claims amendment is currently not due.

However, a petition for a one month extension of time to file this Response has been attached to this Response with amendment. The Commissioner is hereby authorized to charge the appropriate fee to Deposit Account 50-1556.

If the Examiner believes that there are any informalities that can be corrected by Examiner's amendment, or that in any way it would help expedite the prosecution of the patent application, a telephone call to the undersigned at (561) 989-9811 is respectfully solicited.

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The Commissioner is hereby authorized to charge any fees that may be required or credit any overpayment to Deposit Account 50-1556.

In view of the preceding discussion, it is submitted that the claims are in condition for allowance. Reconsideration and re-examination is requested.

Respectfully submitted,

Date:

5/20/04

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